

British Museum (Natural History)



EXOTIC BUTTERFLIES

SERIES No. 4

5 Cards in Colour

Set E 29

One Shilling



a



b

EXOTIC BUTTERFLIES

(a) male, (b) female, *Papilio chabrias*

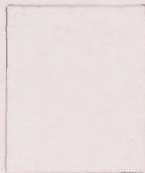
Natural size

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EXOTIC BUTTERFLIES

Papilio chulyrenae (female)

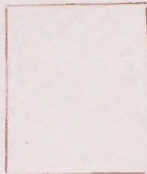
Natural size

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EXOTIC BUTTERFLIES

Papilio chidreus (male)

Natural size

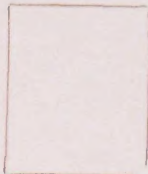
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EXOTIC BUTTERFLIES
Papilio streckerianus (male)

Natural size

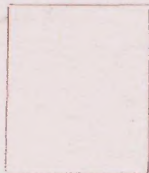
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EXOTIC BUTTERFLIES

Papilio bachus. Subspecies *belazar*

Natural size

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BRITISH MUSEUM (NATURAL HISTORY).

EXOTIC BUTTERFLIES.

Series No. 4.

South American Swallow-tail Butterflies.

By the earliest writers on Natural history the term *Papilio* was used to denote any kind of butterfly or moth. With the recognition of the more obvious differences which separate, for example, the day-flying butterflies from the night-flying Noctuid moths, the use of the term became gradually narrowed down so that when Linnæus (von Linné), in 1758, published the tenth Edition of his 'Systema Naturæ,' which laid the foundations of the modern classificatory system, he was able to restrict it to the butterflies, employing other generic names, such as *Sphinx*, *Noctua*, etc., for the remainder of the Lepidoptera. In those days, however, less than a thousand species of butterflies were known. Even then it was found somewhat inconvenient to place them all in the one genus *Papilio*, and Linnæus himself used a number of sub-divisions which he called phalanges; but these phalanges, although by modern standards of even higher rank than genera, are not in any way to be regarded as Linnæan genera.

At the head of his genus *Papilio*, Linnæus placed the Swallow-tails, of which group some are illustrated in this series of post cards. They were included in the phalanx *Equites*, which was sub-divided into *Achivi* and *Trojani*, and for the sake of reference all three names were used to denote each species. Thus, the first species enumerated by Linnæus in his genus *Papilio* was called *Papilio Eques priamus*. Before long, however, this system proved inadequate, and four names were used to denote each species. This cumbersome system persisted for sixty or seventy years, but, as the knowledge of the structure of butterflies increased and the number of species known to science grew, it was gradually discarded and a system employing two names only, generic and specific, for each species adopted in its stead. In this manner the name *Papilio* has become gradually more and more restricted in its scientific application until now it is used to denote the Swallow-tail butterflies only.

The Swallow-tails form a readily recognisable, compact, and sharply defined family, Papilionidæ, the name being derived from the generic name *Papilio*. Their six perfect legs in both sexes will distinguish them at once from butterflies of all other families except the Whites (Pieridæ), and from these they can be separated by having one vein less on the hind wings, i.e., eight as against nine in the Pieridæ. They form a large and attractive family, of almost world-wide distribution and great variety of form. At different times various schemes of classification of the species have been proposed, based upon a great variety of characters, but to Dr. Horsfield, of the East India Company, then established in Java, falls the honour of having first recognised about a century ago the three great groups into which the Swallow-tails really are divisible. It was not till many years later, however, that Haase, in his 'Investigations on Mimicry,' redefined these groups

calling them respectively *Aristolochia* Swallow-tails, Fluted Swallow-tails, and Kite Swallow-tails. Although there are characters in the butterflies themselves by which to tell their group, the grouping is founded essentially upon larval and pupal structure and habits; moreover, the imaginal characters (those of the mature or perfect insect) are but slight and frequently difficult of observation.

Group 1.—ARISTOLOCHIA SWALLOW-TAILS.

The larvæ in this group feed on *Aristolochia*, or occasionally on closely allied plants, and for this reason Haase proposed the name PHARMACOPHAGUS (poison-eater) for all the species in the group.

They are densely covered with minute hairs, velvety, with glossy head and thoracic legs. Each segment of the body bears a belt of fleshy tubercles covered with fine hairs like those of the body, never with heavy spines. The chrysalis is much compressed and broadened laterally about the middle. Both sexes in the butterfly state can be recognised by a number of minute structural characters, but the male is nearly always distinguished by having the margin of the hind wing nearest the body folded over and enclosing a mass of woolly scent scales.

Swallow-tails belonging to this section are to be found in South America, but more commonly in the East Indies, and a single species occurs in Madagascar. *Troides paradiseus* (E46) is an example of this group, from New Guinea, whilst *Papilio chabrias* (E161) is one of half a dozen species forming a section of the group inhabiting South America. On the post card both sexes are shown, the upper figure representing the male. Commenting on the small size of this species, so unusual in a Swallow-tail, Bates wrote "In a group of the *Papilio* genus, where the effects of a confined forest habitat are seen in many points of structure, as well as in the enfeebled powers of flight, these two species (*chabrias* and its ally *triopas*) show these characteristics to a greater extent than any of their congeners. The female flies near the ground and very slowly, but the male takes a higher and rather bolder flight." Nothing is known of the life history of *Papilio chabrias*. It inhabits the upper reaches of the Amazons.

Of the five other species belonging to this section, one, *Papilio triopas* found in Guiana and the Lower Amazons, is comparatively common, but the others, *P. quadratus*, *P. pizarro*, *P. coelus*, and *P. hahneli* are decidedly rare. All are very similar in general appearance. In *triopas* the four yellow spots on the fore wings are absent, being replaced by a single or double spot towards the apex of the wing, and two or three contiguous spots about the middle of the wing. Of *P. quadratus* very few specimens are known; it has a plain black fore wing, with a single square golden spot towards the lower outer angle: or this spot may be entirely absent. In *P. pizarro*, the fore wing is black, but the golden patch on the hind wing is tripartite only. Of *P. coelus* from Guiana only one male and one female are known. In the male the fore wing is again black, with a single double spot, white in colour, about midway along the front margin (costa) of the fore wing. This spot is much larger in the female, which sex is still further distinguished by having the hind wing patch red. The most remarkable species of the section, however, is *P. hahneli*

of which, again, only one pair is known ; these were taken at Massuary on the Amazons, in 1882. The sexes are alike. The fore wing has three very large transverse bands of a dirty yellow-green colour, and the hind wing is similarly coloured, with a black border all round ; the effect is to produce a striking resemblance to the genus *Thyridia*, of the family *Danaidæ*, and is most probably of mimetic significance.

Papilio childrenae (E162 male, E163 female) is a much commoner species than *P. chabrias* or any of its close allies. It is not found in the Amazons Valley but occurs at higher elevations from Guatemala to Ecuador. Although it was known nearly a hundred years ago, being first described by Gray, in 1832, its life history has yet to be discovered. The male is a strikingly handsome butterfly, very different from the female. Such highly developed sexual dimorphism is a very common feature in South American Swallow-tails, the general pattern as shown in the females of *childrenae* being common to a large number of species, and rendering the correct identification of the females not at all easy. The generally accepted explanation is that offered by the mimicry theory ; viz., that the action of natural forces, by destroying the conspicuous variations and allowing those to live which tend towards the mean of the patterns among the Swallow-tails of similar habits, and found together throughout a large area of country, has gradually produced a common type of pattern in a large number of species, no single one of which can then be readily picked out for persecution by its enemies.

Three distinct races of *P. childrenae* are generally recognised. (i) *P. childrenae childrenae*, occurring from Guatemala to Panama, the male of which has a white spot towards the apex of the fore wing ; (ii) *P. childrenae oedipus*, which is the race figured, and occurs from Colombia to Ecuador : (iii) *P. childrenae unimacula*, which inhabits a restricted area in Ecuador and can generally be recognised, in the male, by having the red spot on the hind wing barely half as large as in the male shown on the post card.

Group 2.—FLUTED SWALLOW-TAILS.

In this second group of Swallow-tails tubercles are absent in the larvæ, or if present they bear hard spines, and the third thoracic segment is much enlarged. The chrysalis is rough, often suggestive of a piece of wood, with the head and thorax curved up, but not so much as in Group 1. The mature insects are distinguished by a number of minute structural characters, but the males can always be recognised by having the abdominal margin of the hind wing curved downwards, as if fluted beneath. From this fact the group-name is derived. The group contains a larger number of species inhabiting temperate regions than either of the other two, and is everywhere present in the tropics.

Species which have already figured on postcards are :

<i>Papilio weiskei</i>	..	E47
„ <i>ulysses</i>	..	E62
„ <i>machaon</i>	..	E41

Strecker's Swallow-tail, *Papilio streckerianus* (E164), named after a well-known American Entomologist, is confined to a comparatively

small area in the dry zone of North Peru. It was first discovered at Marañon, about 1884. The male only is figured on the post card, as the female differs very little from it. Further south, in Chile, there occurs in the form of *Papilio archidamas*, a close ally distinguished by having smaller yellow spots along the margins, and a much broader, clearer yellow band on the hind wing, the yellow band being continued across the fore wing as well. From south Georgia, in the United States, to the Argentine, but not in the areas occupied by *archidamas* and *streckerianus*, there occurs commonly a third species *P. polydamas*, no doubt derived from the same stock. It has the marginal spots still smaller than in either of the other two species and the yellow bands are only moderately large. It is decidedly variable, and in the isolated islands of the West Indies has developed a number of distinct races.

One might readily be forgiven for not recognising *Papilio bachus* (E165) as a Swallow-tail Butterfly, so little resemblance does it bear to the generally accepted idea of that family and so closely does it resemble its Danaine models of the genus *Tithorea*. That its pattern and coloration have been derived in mimetic association with other species there can be little doubt, for the same combination of these is met with over and over again faithfully copied in numbers of genera in other families of tropical American butterflies. The genus *Heliconius* at once suggests itself and also the Ithomiine genera *Melinæa*, *Mechanitis*, etc.

The specimen figured belongs to the race described by Niepelt in 1907 as *belsazar*, which occurs at Cusarci in the valleys of the Upper Pastena in Ecuador. It is the only specimen in the Natural History Museum, the race being distinctly rare and local. Better known races are (i) typical *bachus* from Colombia and (ii) *chrysomelus* from Peru and Bolivia. In both of these the hind wing is for the most part black, but, whereas in the former the orange on the fore wing is restricted to the base of the wing and a small area towards the lower outer angle, in the latter it is even more extensive than in the specimen shown on the post card.

Two other very similar species are known: *Papilio zagreus* and *P. ascolius*.

Both of these have numerous pale spots near the apex of the fore wing, but while in the former a number of black spots is enclosed in the orange area of the hind wing, in the latter this area is entirely free of such spots.

Group 3.—KITE SWALLOW-TAILS.

In this group the larva has the third thoracic segment enlarged as in Group 2, but is without eye-spots or oblique bands. It is generally marked with dots or with transverse or longitudinal stripes.

Apart from minute structural differences, the species can generally be recognised by the thinness of the wing scaling. Haase gave to this group the name *Cosmodesmus*, on account of the ornamental bands so characteristic of most of the species.